REMARKS

The foregoing Amendment corrects translational errors and conforms the claims to United States practice. No new matter is added.

Respectfully submitted,

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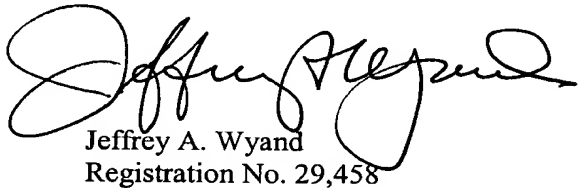

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PATENT
Attorney Docket No. 401338/YPLEE

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:

TADAO YAMAGUCHI

Application No. 09/924,770

Art Unit: Unknown

Examiner: Unknown

Filed: August 9, 2001

For: DISC TYPE ECCENTRIC ROTOR AND FLAT TYPE VIBRATOR MOTOR HAVING THE ROTOR

AMENDMENTS TO SPECIFICATION, CLAIMS AND ABSTRACT MADE VIA PRELIMINARY AMENDMENT

Amendments to existing claims:

1. (Amended) A disc~~-type~~-shaped eccentric rotor having at least two~~-or more~~ air-core coils and generating a difference in centrifugal forces by the rotation of the rotor~~-itself~~, the rotor comprising:

a flat~~-type~~ commutator member having a central shaft insertion through hole~~-in the center thereof~~;

a plurality of commutator land segments~~-formed~~ located around the shaft insertion through hole on a first side of the flat~~-type~~ commutator member;

wound~~-type~~ air-core coil arrangement guides~~-formed~~ outside the shaft insertion through hole on a second side of the flat~~-type~~ commutator member;

air-core coil end portion connection lands~~-formed~~ arranged circumferentially on the second side of the~~-flat~~ type commutator member;

a shaft holder installed around the shaft insertion through hole on the second side of the flat~~-type~~ commutator member; and

wound~~-type~~ air-core coils installed at the wound~~-type~~ air-core coil arrangement guides and having~~-the~~ end portions~~-thereof~~ connected to the air-core coil end portion connection lands.

2. (Amended) The rotor as claimed in claim 1, wherein the air-core coils are radially arranged at~~-a predetermined angle~~ an angular interval and at least one air-core coil is~~-formed as~~ a printed wiring~~-type~~ air-core coil.

3. (Amended) The rotor as claimed in claim 2, wherein the air-core coils comprise one printed wiring ~~type~~ air-core coil and two wound ~~type~~ air-core coils, and the air-core coils ~~are arranged so as~~ do not ~~to~~ overlap one another.

4. (Amended) The rotor as claimed in claim 2, wherein the air-core coils comprise two printed wiring ~~type~~ air-core coils and one wound ~~type~~ air-core coil, and the air-core coils ~~are arranged so as~~ do not ~~to~~ overlap one another.

5. (Amended) The rotor as claimed in claim 1, ~~wherein~~ including wound ~~type~~ air-core coil arrangement guide apertures and reinforcement holes ~~are formed~~ on the printed wiring ~~type~~ commutator member, ~~and~~ wherein the reinforcement holes and the wound ~~type~~ air-core coil arrangement guide apertures are respectively connected through grooves.

6. (Amended) The rotor as claimed in claim 4, wherein the shaft holder and the wound ~~type~~ air-core coil arrangement guides are ~~integrally formed of the same resin by outsert molding on~~ integral with the flat ~~type~~ commutator member.

7. (Amended) A disc ~~type~~-shaped eccentric rotor having at least one ~~or more~~ wound ~~type~~ air-care ~~coils~~ coil and generating a difference in centrifugal forces by the rotation of the rotor ~~itself~~, the rotor comprising:

a flat ~~type~~ commutator member having a central shaft insertion through hole ~~in the center thereof~~;

a plurality of commutator land segments ~~formed~~ located around the shaft insertion through hole on a first side of the flat ~~type~~ commutator member;

a shaft holder installed around the shaft insertion through hole on the second side of the flat ~~type~~ commutator member;

wound ~~type~~ air-core coil end portion connection lands ~~formed~~ arranged circumferentially on the second side of the flat ~~type~~ commutator member;

at least one wound ~~type~~ air-core coil installed outside the shaft holder on the second side of the flat ~~type~~ commutator member and having ~~the~~ end portions ~~thereof~~ connected to the wound ~~type~~ air-core coil end portion connection lands; and

~~an~~a tungsten alloy eccentric weight ~~formed of tungsten alloy to be installed~~ within ~~the thickness of~~ the wound ~~type~~ air-core coil on the second side of the flat ~~type~~ commutator member, ~~the weight fixed~~ and adhered to the flat ~~type~~ commutator member ~~by means of~~ with a resin.

8. (Amended) The rotor as claimed in claim 7, wherein at least one printed wiring ~~type~~ coil is ~~formed~~ located at a position of the flat ~~type~~ commutator member where the eccentric weight is ~~installed~~ located.

9. (Amended) A flat ~~type~~ vibrator motor comprising:

a disc ~~type~~-shaped eccentric rotor having at least one air-core coil and generating a difference in centrifugal forces by the rotation of the rotor ~~itself~~,

a shaft ~~for~~ supporting the eccentric rotor;

a magnet ~~for~~ providing a magnetic field for the rotor via ~~a~~ an axial gap ~~therebetween in an axial direction~~ between the magnet and the rotor,

a brush ~~arranged~~ inside the magnet ~~for~~ providing electric power to the air-core coil through the flat ~~type~~ commutator member, and

a housing accommodating ~~all~~ the ~~above elements~~ rotor, the shaft, the magnet, and the brush.

10. (Amended) The vibrator motor as claimed in claim 9, wherein the shaft is fixed at ~~one~~ a first side of the housing and including a member for preventing the eccentric rotor from moving in a radial direction ~~is~~ installed at ~~the other~~ a second side of the housing.

Amendments to the abstract:

Abstract of the Disclosure

The present invention provides a disc ~~type~~-shaped eccentric rotor having at least two air-core coils~~, the~~. The rotor ~~comprising~~ includes a flat ~~type~~ commutator member having a central shaft insertion through hole ~~in the center thereof, a plurality of~~ commutator land segments ~~formed~~ arranged around the shaft insertion through hole on a first side of the flat ~~type~~ commutator member, wound ~~type~~ air-core coil arrangement guides ~~formed~~ located around the shaft insertion through hole on a second side of the flat ~~type~~ commutator member, air-core coil end portion connection lands ~~formed~~ arranged circumferentially on the second side of the flat ~~type~~ commutator member, a shaft holder installed around the shaft insertion through hole on the second side of the flat ~~type~~ commutator member, and wound ~~type~~ air-core coils installed at the wound ~~type~~ air-core coil arrangement guides and having ~~the~~ end portions ~~thereof~~ connected to the air-core coil end portion connection lands. The air-core coils of bigger sizes are uniformly arranged on the commutator member, so that high efficiency and easy Installation can be ~~obtained~~ achieved. The arrangement of the air-core coils offsets the center of gravity from the geometrical centroid of the rotor, and there is no need for an additional eccentric member. ~~Otherwise, since~~ Since the printed wiring ~~type~~ air-core coil is thinner than the wound ~~type~~ air-core coil, an eccentric weight is installed on the

printed wiring ~~type~~ air-core coil so that a great amount of vibration may be obtained during rotation of the rotor.

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For: DISC TYPE ECCENTRIC ROTOR AND FLAT TYPE VIBRATOR MOTOR HAVING THE ROTOR

PENDING CLAIMS AFTER ENTRY OF PRELIMINARY AMENDMENT

1. A disc-shaped eccentric rotor having at least two air-core coils and generating a difference in centrifugal forces by the rotation of the rotor, the rotor comprising:

a flat commutator member having a central shaft insertion through hole;

a plurality of commutator land segments located around the shaft insertion through hole on a first side of the flat commutator member;

wound air-core coil arrangement guides outside the shaft insertion through hole on a second side of the flat commutator member;

air-core coil end portion connection lands arranged circumferentially on the second side of the type commutator member;

a shaft holder installed around the shaft insertion through hole on the second side of the flat commutator member; and

wound air-core coils installed at the wound air-core coil arrangement guides and having end portions connected to the air-core coil end portion connection lands.

2. The rotor as claimed in claim 1, wherein the air-core coils are radially arranged at an angular interval and at least one air-core coil is a printed wiring air-core coil.

3. The rotor as claimed in claim 2, wherein the air-core coils comprise one printed wiring air-core coil and two wound air-core coils, and the air-core coils do not overlap one another.

4. The rotor as claimed in claim 2, wherein the air-core coils comprise two printed wiring air-core coils and one wound air-core coil, and the air-core coils do not overlap one another.

5. The rotor as claimed in claim 1, including wound air-core coil arrangement guide apertures and reinforcement holes on the printed wiring commutator member, wherein the reinforcement holes and the wound air-core coil arrangement guide apertures are respectively connected through grooves.

6. The rotor as claimed in claim 4, wherein the shaft holder and the wound air-core coil arrangement guides are integral with the flat commutator member.

7. A disc-shaped eccentric rotor having at least one wound air-care coil and generating a difference in centrifugal forces by the rotation of the rotor , the rotor comprising:

a flat commutator member having a central shaft insertion through hole;

a plurality of commutator land segments located around the shaft insertion through hole on a first side of the flat commutator member;

a shaft holder installed around the shaft insertion through hole on the second side of the flat commutator member;

wound air-core coil end portion connection lands arranged circumferentially on the second side of the flat commutator member;

at least one wound air-core coil installed outside the shaft holder on the second side of the flat commutator member and having end portions connected to the wound air-core coil end portion connection lands; and

a tungsten alloy eccentric weight within the wound air-core coil on the second side of the flat commutator member and adhered to the flat commutator member with a resin.

8. The rotor as claimed in claim 7, wherein at least one printed wiring coil is located at a position of the flat commutator member where the eccentric weight is located.

9. A flat vibrator motor comprising:

a disc-shaped eccentric rotor having at least one air-core coil and generating a difference in centrifugal forces by the rotation of the rotor,

a shaft supporting the eccentric rotor;

a magnet providing a magnetic field for the rotor via an axial gap between the magnet and the rotor,

a brush inside the magnet providing electric power to the air-core coil through the flat commutator member, and

a housing accommodating the rotor, the shaft, the magnet, and the brush.

10. The vibrator motor as claimed in claim 9, wherein the shaft is fixed at a first side of the housing and including a member for preventing the eccentric rotor from moving in a radial direction installed at a second side of the housing.